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A test of social learning and intergenerational transmission among batterers

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ABSTRACT

This research examined the direct and indirect transmission of family-of-origin violence among a sample of male domestic violence offenders. Intergenerational transmission of violence was tested by examining the effects of childhood corporal punishment experiences and witnessing inter-parental physical violence on the odds of reporting minor and severe intimate partner violence perpetration in adulthood. Social learning mechanisms were applied to examine the relationship between abuse experiences and the incidence of minor and severe forms of intimate partner violence. Use of a sample of 204 male domestic batterers attending court-mandated family violence intervention programs in an urban setting revealed considerable variation in minor and severe intimate partner violence. Results from logistic regression models suggested intergenerational transmission and social learning provided distinct mechanisms for both minor and severe forms of intimate partner violence.

Introduction

Despite a bounty of empirical literature on interpersonal violence, the general social learning perspective represents one of the few theoretical frameworks that addresses the etiological underpinnings of domestic violence. Such research draws on a loose learning framework that suggests that abusive behavioral patterns are communicated and passed from parents to their children through an intergenerational transmission of violence (Bandura, 1973; Delsol & Margolin, 2004; Mihalic & Elliott, 1997; Straus, Gelles, & Steinmetz, 1980). That is, dysfunctional parents become role models for their children regarding the appropriateness of using anger and aggression to deal with stressors and frustrations when interacting with their intimate partners. Modeled behaviors are reinforced when the individual perceives favorable outcomes from the use of aggression and violence. Thus, witnessing and experiencing violence within the home during childhood is postulated to have residual effects which impact the use of physical aggression in adult intimate relationships, including incidents of marital and spousal violence (Bevan & Higgins, 2002; Corvo, 2006; Doumas, Margolin, & John, 1994; Holtzworth-Munroe, Bates, Smutzler, & Sandin, 1997; Hotaling & Sugarman, 1986; Kalmus, 1984; Straus et al., 1980).

While the intergenerational transmission learning perspective has been frequently used to explain intimate partner violence (IPV),[1] the effect sizes reported in this literature are typically small. In a review of family-of-origin violence research, Holtzworth-Munroe et al. (1997) reported modest correlations between IPV and family-of-origin violence. The small effect sizes suggested that there were key, possibly mediating, indicators missing from these theoretical models (Corvo, 2006). In an attempt to address this shortcoming in the literature, Corvo recently integrated elements of attachment theory into an intergenerational transmission of violence framework. This exploratory analysis, while an important first step, employed a small sample size of domestic violence offenders ($n = 74$) that limited the complexity of the model. Despite these shortcomings, Corvo's work provided preliminary support for the tenability of integrating intergenerational transmission perspectives with other theories capable of explaining IPV.

Akers' (1973, 1998) social learning theory (SLT) offers a comprehensive explanation of the specific mechanisms, familial and non-familial, involved in learning violence. More specifically, social learning theory explains the development of individual pro-social and criminal behaviors through observation of others' behaviors, internalization of attitudes and values learned from others, imitation of the behaviors of role models, and reinforcement of behavior through positive and negative punishment. As such, SLT offers an explanation for how individuals exposed to abusive situations within the home during childhood learn and perpetuate a cycle of domestic violence. According to Sellers, Cochran, and Branch (2005), SLT "accommodates and integrates the key theoretical elements of… intergenerational transmission theory" (p. 381), thus, reinforcing the viability of integrating intergenerational transmission theory with SLT.

The present work examined the role of SLT in enhancing the understanding of the intergenerational transmission of violence. In

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particular, the intergenerational transmission model was expanded to include mediating and moderating effects from Akers' SLT, addressing a gap in the literature with this integration. Using self-report data from a sample of male participants enrolled in a community-based family violence program, the degree to which experiencing and/or witnessing family violence in childhood is directly associated with IPV in adulthood was examined. Social learning mechanisms were also modeled to explain the effects of experiencing or witnessing family violence on IPV. Finally, the conditional effects of experiencing or witnessing family violence in childhood on mechanisms asserted in social learning theory were tested.

Review of the literature

Intergenerational transmission of violence

It has long been recognized that exposure to violence during childhood is a risk factor for future violent behavior in intimate relationships (e.g., dating, cohabitating, and marital). Thus, intergenerational transmission theory implies social learning as a broad conceptualization of behavior modeling within the "family-of-origin" environment, explaining the etiology of IPV such that individuals who experience and observe violence in their family-of-origin during childhood will be more likely to repeat this violent behavior in adulthood (Kaufman & Zigler, 1987; Straus & Gelles, 1990). When referring to family-of-origin violence studies, researchers often dually focus on whether individuals (1) witnessed parental violence and (2) received forms of maltreatment or abuse in the home during childhood (Delsol & Margolin, 2004). While the empirical validity for intergenerational transmission theory has been mixed at times (see Sugarman & Hotaling, 1989), the broad literature on the "violence begets violence" hypothesis has identified witnessing parental abuse or aggression and experiencing childhood maltreatment as significant risk factors for future violent behavior (e.g., Foshee, Bauman, & Linder, 1999; MacEwen, 1994; Mihalic & Elliott, 1997).

As it pertains to IPV, numerous studies have also found that individuals who reported one of these risk factors are more likely to experience intimate partner violence as adults, especially if endured in childhood (e.g., Cappell & Heiner, 1990; Hotaling & Sugarman, 1986; Langhinrichsen-Rohling, Neidig, & Thorn, 1995). Overall, empirical research on the link between family-of-origin violence and adult violence, however, appears to be a modest one, with great variability in transmission rates across studies (Delsol & Margolin, 2004; Stith, Rosen, Middleton, Busch, Lundeberg, & Carlton, 2000). Importantly, although exposure to family-of-origin violence is a risk factor of future intimate partner violence, such observations are not necessarily deterministic of future partner violence. In other words, not all men who experience family-of-origin violence engage in intimate partner violence, and not all men who engage in intimate partner violence have a history of violence within their family-of-origin (Mihalic & Elliott, 1997).

A more robust finding throughout the research is that men who were raised in violent households are more likely to grow up to accept violent victimization and/or condone their own violence against their adult female partners than are males without a history of family violence (e.g., Delsol & Margolin, 2004; Holtzworth-Munroe et al., 1997; Hotaling & Sugarman, 1986). Recent studies indicated that the effects of intergenerational transmission of violence vary by gender, such that the effects tend to be stronger for males than females (Lackey, 2003; Stith et al., 2000). Theorists have suggested that such gender differences regarding violence transmission may be due to same-sex modeling effects (see Kalmus, 1984; Mihalic & Elliott, 1997; Sugarman & Frankel, 1996). Other scholars have argued that the transmission of violence within families-of-origin involves a general communication of violence related to intimate partner violence that lacks gender-specific patterns (Kwong, Bartholomew, Henderson, & Trinke, 2003). These works raise many questions surrounding the mechanisms in the intergenerational transmission of violence and point to the need for better understanding of the etiology of male-on-female violence, for which a social learning approach seems ideal (Delsol & Margolin, 2004).

Social learning theory

Akers' (1998) social learning theory offers a general rubric explaining both deviant and conforming behavior that is comprised of four major explanatory concepts: definitions, differential association, imitation, and differential reinforcement. *Definitions* refer to the attitudes and beliefs, both general and specific, that individuals hold regarding appropriate and inappropriate behavior. SLT posits that criminal behavior is most likely for persons who hold attitudes supporting deviance or those with weak or neutral moral convictions. *Differential association* refers to primary, secondary, and tertiary relations with individuals and groups that introduce one to definitions and behaviors. The theory predicts that the likelihood of deviance is greater among individuals whose significant others endorse and engage in deviance themselves.

Imitation refers to the process whereby one emulates the behavior of respected, admired, and frequently observed role models, such as parents. This observational learning process is particularly important during childhood, and is central to intergenerational transmission and social learning theories. Children who observe abusive or violent behavior between their parents and between their parents and other family members (e.g., siblings) may be more likely to initiate and habituate IPV. *Differential reinforcement* is the balance between direct or anticipated rewards and consequences for certain behavior. Acts that are expected to lead to and/or actually result in pleasure or reward are more likely to be initiated and consistently completed.

Importantly, only a limited number of studies have used Akers' (1998) SLT to examine specific forms of intimate partner violence. Boeringer, Shehan, and Akers (1991) and Akers (1998) found support for social learning theory as an explanation of rape and sexual aggression among a sample of male college undergraduates. More recently, Sellers and colleagues (Sellers et al., 2005; Sellers, Cochran, & Winfree, 2003) tested the effects of social learning mechanisms on the prevalence of courtship violence among graduate and undergraduate students. Sellers et al. (2005) reported partial support for social learning in explaining courtship violence, and found gender differences in courtship violence to be partially mediated by SLT mechanisms and differences in differential reinforcement between married versus dating students. Although each of these works provided a complete test of the four dimensions of social learning theory, the generalizability of the findings was limited to behavior among college students.

The present study built on these separate literatures, examining the intergenerational transmission of violence and SLT mechanisms for explaining intimate partner violence among a sample of men participating in a family violence program. The vast majority of social learning works have utilized adolescent or college student populations to investigate various forms of deviance (e.g., Akers & Lee, 1996; Hwang & Akers, 2003; W. F. Skinner & Fream, 1997; Warr & Stafford, 1991; Winfree & Bernat, 1998), including IPV. Therefore, a test of IPV among domestic batterer counseling groups allows for the potential strengthening of the generalizability of SLT. The social learning perspective, as a general theory of crime, proposes to explain all forms of deviant and pro-social behaviors. Similar to other studies that have utilized offending populations to test general theories of crime (e.g., general strain, general theory of crime, social bonding) (see Benda & Toombs, 2002; O'Connell, 2003; A. R. Piquero, MacDonald, Dobrin, Daigle, & Cullen, 2005; N. L. Piquero & Sealock,

2000), this article utilizes an offending sample of male batterers to explore the mechanisms of social learning and intergenerational transmission of violence. This work is among the first to investigate this integrated theoretical approach using such a sample of offenders. In addition to the generality of SLT, the use of a batterer sample is defendable given that IPV research suggests there is variation in types of domestic violence perpetrators (Holtzworth-Munroe, Meehan, Herron, Rehman, & Stuart, 2000), as well as the types of violence in which they engage (Mihalic & Elliott, 1997; Stith et al., 2000).

The present article examines three hypotheses. First, consistent with the intergenerational transmission perspective, it is hypothesized that experiences of childhood physical abuse and witnessing physical violence between parents during early childhood are related to IPV in adulthood. It is possible that all forms of violence in family-of-origin are related to adult IPV in a general way (Kwong et al., 2003).

Second, the mediating role of SLT mechanisms within the intergenerational transmission of IPV is explored. As all men who experience family-of-origin violence will not engage in intimate partner violence, it is possible that social learning mechanisms may account for the general relationship found between family-of-origin violence and IPV in adulthood. Specifically, it is hypothesized that (1) attitudes and beliefs condoning IPV, (2) associations with others who approve of and/or engage in IPV, (3) the influence of significant others who engage in IPV, and (4) perceived rewards and costs of IPV mediated the relationship between childhood abuse history and adult IPV.

Finally, the moderating impact of intergenerational transmission of violence on SLT mechanisms and IPV is examined. Experiences of childhood abuse and/or observing inter-parental violence may shape later associations and interactions (McCord, 1983). Accordingly, individuals who experienced family-of-origin violence would be expected to be the most likely persons to adopt pro-violence attitudes and beliefs, to suffer from social inadequacies, and to associate with violent peers (Capaldi, Dishion, Stoolmiller, & Yoerger, 2001; Knudsen, 1992). Therefore, it is hypothesized that experiencing and witnessing family-of-origin violence conditions attitudes and beliefs regarding IPV, associations and imitation of significant others who engage in IPV, and the perceived rewards and costs of engaging in IPV.

Data and measures

Sample and procedures

The data were collected from cross-sectional, retrospective surveys administered to adult male batterers registered in level two (low violence) domestic violence programs in Hillsborough County, Florida. Men enrolled in these intervention programs were either court-mandated or volunteered to complete such batterer programs for a variety of reasons, including: admitted verbal or emotional abuse of their partners, arrest for perpetration of physical violence against their partners, or as treatment for power control and anger management issues within their intimate relationships. These intervention programs each followed a twenty-six-week program of state-mandated group therapy topics and curriculum for domestic violence intervention (based on the Duluth model, see Pence & Paymar, 1993). After attending a new registrant orientation, each subsequent regular class was comprised of individuals in various stages of the twenty-six-week program, ranging from week two to week twenty-six. In Hillsborough County, participants could choose from among the scheduled classes at six facilities. Participants chose to attend the location and weekly class that were most convenient for their schedules (i.e., work and family lives). Participants were required to attend all twenty-six weeks of the program to earn a certificate of completion. On average, each of the six program sites facilitated between ten and fifteen classes that met once per week with approximately five to ten participants present.

Data were collected between March 2005 and August 2005 from participants in the four largest of the six active batterer intervention programs in Hillsborough County to capture as large and representative a sample as possible. During the first week at each research site, all active male family violence classes and new orientation classes were solicited for participation in the study. Thereafter, only first-time orientation classes were solicited to participate, thereby eliminating participant duplication. Participants were not required to sign the consent forms usually required by the Institutional Review Board (i.e., consent forms were waived). This served to ensure anonymity and confidentiality, as well as to encourage honesty from respondents for sensitive questions. Participants were paid ten dollars for completing the thirty to forty-five minute surveys.

Across the four sites, 204 men agreed to participate in the study, resulting in a positive response rate of 82.9 percent. Forty-two men (17.1 percent), however, refused participation across the four sites, for whom no demographic information was available. Therefore, the generalizability of any conclusions articulated to the *entire* population of men participating in these types of court-referred programs in Hillsborough County is uncertain. The generally low refusal rates and high participation rates, however, suggest that the sample was representative of male domestic violence participants in level two (low violence) programs in this jurisdiction. The majority of the participants ($n = 191$, 93.6 percent) were solicited from the mandatory orientation classes; thirteen cases (6.4 percent) were obtained from the group meeting sessions.[2]

Most of the men in this sample were under forty years old ($M = 34.53$, $SD = 10.10$). Approximately half of the participants identified themselves as White (46.1 percent, $n = 94$); almost one-third of the participants identified themselves as Black or African American (33.8 percent, $n = 69$). Thirty-two men (15.7 percent) reported their race as "other," of which twenty-nine men (90.6 percent) described their ethnicity as Hispanic. About half of the men reported they were married (45.3 percent, $n = 91$), though nearly half of these men were not currently living with their wives ($n = 41$). The other half of the men described themselves as either single or divorced (54.7 percent, $n = 110$), with more than half of these subjects living without an intimate partner or significant other ($n = 60$). Seventy-six percent ($n = 155$) of the men possessed at least a high school diploma or equivalent. Only 8 percent ($n = 17$) of participants possessed a bachelor's degree or higher. Sixty percent ($n = 124$) of the men reported an annual household income of less than $30,000. Analyses revealed that there were no significant differences between the four programs from which participants were solicited for the demographic, education, and income measures.

Measures

Dependent variables

The dependent variables reflected measures of self-reported intimate partner violence. Research on IPV suggests that there is variation in the degree of violence perpetration (Holtzworth-Munroe et al., 2000), as well as the effects of general learning mechanisms on different severity levels of IPV (e.g., Mihalic & Elliott, 1997). Based on Mihalic and Elliott's work, measures of minor violence and severe violence were created from items of a revised version of the Conflict Tactics Scale (CTS) (Straus, 1979). The decision to examine severity in IPV reflected findings in the literature that suggest heterogeneity exists in IPV (Bodnarchuk, Kropp, Ogloff, Hart, & Dutton, 1995; Holtzworth-Munroe & Stuart, 1994).

For *minor physical violence*, respondents were asked to indicate how often they had ever done any of the following to a person they were in an intimate relationship with: (1) shook them, (2) threatened to hit or throw something at them, and (3) slapped them. Responses to

these items were zero, one, two to three, four to six, or seven or more times, which were coded from 0 to 4 for the purposes of analyses. An additive index of the minor violence items was created (Cronbach's alpha = .67). (While the alpha coefficient was lower than the preferred .70 threshold, the items were used to create a dichotomous measure of prevalence, rather than incidence. Therefore, the items used for minor IPV were retained.) For *severe physical violence*, responses to the following four items were included: (1) beat them up; (2) hit or tried to hit them with something; (3) kicked, bit, or hit them with a fist; and (4) choked them. As with the minor violence items, responses ranged from never (coded 0) to seven or more times (coded 4). An additive index of the severe violence items was also created (Cronbach's alpha = .78). Each of the physical violence indexes was highly skewed; thus they were transformed into dichotomous measures (0 = never used a particular form of physical violence [50.0 percent, $n = 102$ for minor; 38.7 percent, $n = 79$ for severe]; 1 = used a particular form of physical violence [50.0 percent, $n = 102$ for minor; 61.3 percent, $n = 125$ for severe]). As such, these dichotomous measures of physical violence served as an indicator of intimate partner physical violence *prevalence*, rather than incidence.

Independent variables

Family-of-origin violence variables. In order to examine intergenerational transmission hypotheses, four measures were created to assess experiencing and witnessing domestic violence during childhood. The first measure reflected physical punishment experienced by the respondent during childhood. Respondents were asked to indicate how often they received the following types of punishment while growing up: (1) had something thrown at you, (2) spanked with instrument (e.g., belt), and (3) kicked or hit with closed fist. Responses to the four items were zero (*never*), one (*sometimes*), two (*often*), and three (*very often*). The items were combined in an additive index (Cronbach's alpha = .66) to reflect corporal punishment, referred to hereon as *physical maltreatment*. In an effort to examine same-sex modeling effects, single-item indicators of how often the respondent was spanked or hit while growing up by (a) a mother-figure living in the home (*from mother-figure*) and (b) a father-figure living in the home (*from father-figure*) were also included. For each item, the available response choices were zero (*never*), one (*sometimes*), two (*often*), and three (*very often*). In addition to questions regarding the respondent's experiences of physical maltreatment during childhood, a measure of abuse between parents (*witnessing parent abuse*) was included. Respondents were asked to indicate how often they had seen "one parent hit the other parent" during childhood (0 = never, 1 = sometimes, 2 = often, and 3 = very often). The above indicators were derived from those used by Foshee et al. (1999) and Mihalic and Elliott (1997) in their studies of intergenerational transmission of violence and reflect sources of direct modeling.

Social learning: differential association variables. Several variables were also created to examine the four constructs of Akers' social learning theory. Differential association was assessed on the basis of measures that reflect the degree to which respondents witnessed physically violent behavior by their family members, closest friends, neighbors, and others; and the respondent's belief that these significant others hold pro-violent attitudes and beliefs. With regard to significant *others' definitions* or beliefs, an additive index (Cronbach's alpha = .81) was created based on four items that asked respondents to indicate to what degree their closest family and friends would agree or disagree with the use of physical violence and threatening physical aggression in an intimate relationship (1 = strongly disapprove, 2 = somewhat disapprove, 3 = somewhat approve, and 4 = strongly approve). Three additive indexes measured how often primary, secondary, and tertiary others had displayed physical violence toward intimate partners. These items were similar to those used by Sellers and colleagues (Sellers et al., 2005; Sellers et al., 2003) in their study of courtship violence. Responses to these items were never, once, two to three times, four to six times, and seven or more times (coded from 0 to 4). For primary significant others (*primary frequency*), the index included the frequency of observed violence for (1) other family members, (2) close friends, (3) friends you've known longest, and (4) other friends (Cronbach's alpha = .80). The frequency of observed violence for parents was excluded from this measure to ensure the index would not conceptually overlap with intergenerational transmission of violence measures.[3] For secondary significant others (*secondary frequency*), the index included the frequency of observed violence for (1) neighbors; (2) teachers or professors; (3) pastor, priest, or church counselor; (4) police or law enforcement; and (5) co-workers or boss (Cronbach's alpha = .71). For tertiary significant others (*tertiary frequency*), the index included the frequency of observed violence for (1) people in video games, (2) people in television or movies, and (3) people on the Internet (Cronbach's alpha = .72). Admittedly, these indicators did not permit for the operationalization of differential association by frequency (i.e., how often they have contact), duration, priority, and intensity, but rather represented crude proxy measures of this concept.

Social learning: imitation variables. Three measures of perceptions related to imitation and its effects on IPV were created. In addition to asking respondents about whether or not they observed significant others, including the media, using physical violence toward an intimate partner, they were asked to report whether or not the behavior of the significant others categories influenced their own behavior (responses were 0 = no, 1 = yes). To create the imitation measures for primary, secondary, and tertiary others, dichotomous measures (0 = never, 1 = one or more times) for each of the significant others' frequency of physical violence items (described above) were multiplied by a dichotomous measure of whether or not the others' behavior influenced the respondent. Then, these items were used to create additive indexes reflecting the number of significant others in primary (friends and family, including parents) (*primary imitation*; Cronbach's alpha = .72), secondary (i.e., neighbors, teachers, church, police, co-workers) (*secondary imitation*; Cronbach's alpha = .65), and tertiary (i.e., media) (*tertiary imitation*; Cronbach's alpha = .77) groups whose intimate physical violence had influenced the respondent. While the secondary imitation alpha coefficient was below the preferred threshold of .70, it was higher than that reported in other studies of SLT and IPV (see Sellers et al., 2005). Similar to the imitation measures used by Sellers and colleagues (Sellers et al., 2005; Sellers et al., 2003), these measures captured observed IPV performed by "admired" models; the indicators included here, however, may have been more conservative since they reflected only those observed behaviors that the respondent believed affected his own behavior. These measures relied on self-reports of direct observation of imitated behaviors, but included only those observations that the individual perceived of as influencing his own behavior toward intimate others.

Social learning: definition variables. Two additive indexes were used to measure definitions: a two-item index of approving definitions of partner physical aggression (*specific*) and a three-item index of intimate partner *neutralizing* definitions. These items were also derived from those used by Sellers and colleagues (Sellers et al., 2005; Sellers et al., 2003). Respondents were asked to indicate to what degree they agreed or disagreed with the following statements: "When a man marries a woman, he has a right to use physical force if necessary to make her obey," "When a man is in an intimate relationship with a woman, he has the right to use physical force if necessary to make her obey," "If my intimate partner does not want me to yell, hit, or throw things at her, she should not get me angry," "It is OK for me to hurt or threaten to hurt (not in self-defense) my intimate partner because she should know better than to 'push' or antagonize me," and "I would never turn in friends who hurt or threatened to hurt (not in self-defense) their intimate partners." Responses were Likert-type (1 = strongly disagree to 4 = strongly agree).

Social learning: differential reinforcement variables. Several measures of differential reinforcement were used. First, the men were asked to indicate how they anticipated their family or close friends would react to their use of physical violence against an intimate partner (*anticipated reactions*). Responses to this item were 1 = encourage it; 2 = disapprove, but do nothing; 3 = scold or lecture you; 4 = disown you; and 5 = turn you in to the police (item was reverse coded). Second, an additive index was created from two items reflecting how the respondent would feel if he (a) used and (b) threatened to use partner physical violence. Responses to these two *net outcome* reinforcement items were 1 = excited or "high," 2 = nothing at all, and 3 = bad (items were reverse coded). Third, one item reflecting the respondent's perception that intimate violence did not interfere with other activities was used (*non-interference*). Respondents were asked to indicate how much they agreed or disagreed with the following Likert-type (1 = strongly disagree, 2 = somewhat disagree, 3 = somewhat agree, 4 = strongly agree) statement: "Using physical violence against my intimate partner interferes with activities I usually do (e.g., work, church, spending time with friends)" (reverse coded). Finally, the net *rewards-to-costs* of using violence against an intimate partner were measured by asking which, if any, of the following rewards they anticipated: "I would impress others," "I would feel 'high' or excited," "I would feel powerful," "I would feel successful," and "I would be more like someone I admired." Respondents were also asked to indicate which, if any, of the following costs they anticipated: "I would lose my friends," "I would get into trouble with my parents/family," "I would get into trouble with the police," "I would lose my intimate partner," and "I would feel guilty." These items were similar to those used by Sellers and colleagues (Sellers et al., 2005; Sellers et al., 2003). The net rewards-to-costs measure was calculated by subtracting the sum of the costs (one point per cost) from the sum of the rewards (one point per reward); hence, the values of this measure ranged from -5 (all costs, no rewards) to +5 (all rewards, no costs).

Control variable

Since approximately half of the sample identified themselves as non-White, a control variable for race was also included in the models. Although IPV occurs across all racial and sociodemographic groups, higher rates of domestic violence have been associated with racial minority status and lower socioeconomic status (Benson, Wooldredge, Thistlethwaite, & Fox, 2004; Straus et al., 1980). Furthermore, African Americans and Latinos comprise a disproportionate percentage of men referred into the criminal justice system for domestic abuse (Aldarondo & Mederos, 2002). Therefore, race was included in the analyses and operationalized as a dichotomous measure (0 = White [46.1 percent, $n = 94$], 1 = non-White [53.4 percent, $n = 109$]). In an effort to maintain respectable power in the analyses, no additional control variables were included.

Results

Binary logistic regression analyses were conducted to examine the separate and combined effects of intergenerational transmission and

Table 1
Logistic regression models of minor physical violence against an intimate partner on social learning and history of violence measures and moderating effect of mother-figure abuse (n = 195).

	Model 1			Model 2			Model 3		
	b	se(b)	OR	b	se(b)	OR	b	se(b)	OR
Race (1 = non-White)	.733*	.323	2.081	1.129*	.404	3.092	1.279*	.418	3.593
Corporal punishment									
Physical maltreatment	.215*	.099	1.240	.201	.111	1.222	.193	.116	1.212
From mother-figure[a]	-.226	.207	0.798	-.607*	.250	0.545	-.622*	.249	0.537
From father-figure	.572*	.218	1.773	.893*	.265	2.443	1.119*	.294	3.061
Witness parent abuse	-.025	.230	0.975	-.104	.265	0.901	-.187	.274	0.829
Definitions									
Specific				.186	.245	1.204	.299	.256	1.349
Neutralizing				-.022	.133	0.979	-.033	.138	0.968
Differential associations									
Others definitions				.038	.121	1.039	.026	.124	1.026
Primary frequency[a]				.190*	.094	1.209	.728*	.353	2.070
Secondary frequency				-.034	.105	0.966	-.056	.109	0.946
Tertiary frequency				.141*	.056	1.152	.116*	.058	1.123
Differential reinforcement									
Anticipated reactions				.408*	.179	1.503	.374*	.180	1.454
Net outcome				.012	.430	1.012	-.192	.455	0.825
Non-interference				-.190	.143	0.827	-.232	.145	0.793
Rewards-to-costs				-.166	.142	0.847	-.179	.143	0.836
Imitation									
Primary imitation				-.265	.224	0.767	-.408	.246	0.665
Secondary imitation				.933*	.386	2.543	.923*	.390	2.517
Tertiary imitation				-1.031*	.406	0.357	-.941*	.411	0.390
*Mom punish*primary frequency*[a]							.619*	.285	1.857
Intercept	-1.117*			-3.770*			-3.443*		
-2 Log L (intercept)	270.32			246.37			209.56		
-2 Log L (model)	246.37			209.56			203.82		
Model χ^2/df	23.95/5*			60.76/18*			66.50/19*		
Pseudo-R^2 (Cox and Snell)	.116			.268			.289		

[a] In Model 3, moderating measures were centered to avoid multicollinearity issues.
* $p < .05$.

SLT on minor and severe intimate physical violence. An examination of bivariate correlations between measures (see Appendix A) and variance inflation factor (VIF) scores indicated that the models did not appear to possess multicollinearity problems (see Fox, 1991).[4] Preliminary analyses revealed there were a few outliers for both the minor ($n=2$ outliers) and severe ($n=2$ outliers) violence regressions.[5] Therefore, the outlier cases were removed for the purposes of the analyses reported in this study.

Model 1 in Table 1 tested the effects of intergenerational transmission measures on the prevalence of minor partner violence, controlling for race. The model accounted for 11.6 percent of the variance in minor partner violence. Experiencing frequent corporal punishment during childhood was associated with reports of engaging in minor forms of partner violence in adulthood. For each one-unit increase in corporal punishment from a father-figure, the odds of minor partner violence increased 77 percent. For each one-unit increase in childhood physical maltreatment, the odds of minor IPV increased 24 percent. These results were consistent with previous tests of intergenerational transmission theory that have found enduring physical maltreatment leads to future violence (e.g., Corvo & Carpenter, 2000) and same-sex modeling of violence (e.g., Mihalic & Elliott, 1997; Sugarman & Frankel, 1996). Furthermore, controlling for physical maltreatment, race was significantly related to minor IPV. Non-Whites were more than twice as likely as Whites to report engaging in minor IPV. Contrary to expectations, witnessing interparental violence during childhood was not significantly associated with engaging in adult minor IPV.

Model 2 in Table 1 combined social learning theory measures and intergenerational transmission measures in an examination of minor partner violence, controlling for race. The combined model explained 26.8 percent of the variance, and significantly improved over the intergenerational transmission-only model with regard to fit ($\Delta\chi^2[13,\ n=195]=36.81,\ p<.001$) and amount of variance explained. Upon inclusion of the SLT measures, experiencing physical maltreatment was no longer significantly related to minor IPV, but receiving corporal punishment from a father-figure remained significantly associated with minor IPV. For each one-unit increase in corporal punishment by a father-figure, the odds of minor IPV increased 144 percent. Once SLT measures were introduced into the minor IPV model, corporal punishment by a mother-figure became significant. For each one-unit increase in corporal punishment by a mother-figure, the odds of minor IPV decreased 45 percent. These findings suggest that same-sex modeling continued to affect adult minor IPV after accounting for measures of social learning theory, but opposite-sex modeling may have inhibited adult IPV. Despite controlling for family-of-origin experiences of violence and social learning measures, minor IPV continued to vary by race as non-Whites were more than three times as likely as Whites to report engaging in minor IPV.

A number of SLT measures were significantly associated with minor IPV, despite controlling for intergenerational transmission variables (see Model 2 in Table 1). Consistent with the tenets of social learning theory, primary (e.g., friends and other family members) differential association, tertiary (e.g., media) differential association, anticipation of positive reinforcement, and secondary (e.g., neighbors, co-workers, church members) imitation were significantly associated with an increase in the odds of minor IPV. For each one-unit increase in primary and tertiary differential associations, the odds of minor violence increased 21 percent and 15 percent, respectively. For each one-unit increase in anticipated positive reinforcement, the odds of minor IPV increased 50 percent. For each one-unit increase in secondary imitation, the odds of minor IPV increased 154 percent. Contrary to SLT, tertiary imitation was associated with a significant decrease in the odds of minor IPV. For each one-unit increase in tertiary imitation, the odds of minor IPV decreased 64 percent. Clearly, both intergenerational transmission theory and social learning theory were important explanations of minor IPV.

To test whether the effects of SLT depended on childhood exposure to violence, interaction effects were examined. To assist with the interpretation of interaction effects, as well as the preservation of power in the analyses, the examination of moderating effects focused on separate interaction terms for the product of significant abuse measures and significant race and SLT measures. For minor IPV, this resulted in twelve interaction models (mother-figure and father-figure corporal punishment times race, primary frequency, tertiary frequency, anticipated reactions, secondary imitation, and tertiary imitation). Moreover, to avoid multicollinearity problems due to increased standard errors (Aiken & West, 1991), the measures used to examine interaction effects were centered (i.e., standardized) prior to examination. Out of the twelve interaction models, only one interaction was significant—mother-figure corporal punishment*-primary differential association. Model 3 in Table 1 provides the findings for the interaction between mother-figure corporal punishment and primary differential association. (The models for nonsignificant interaction terms were excluded. Tables reporting the results for these models may be obtained from the corresponding author upon request.)

The results for Model 3 were similar to Model 2 in Table 1, except the mother-figure corporal punishment and primary differential association measures were centered. Model 3 also included the interaction term, mother-figure punishment*primary differential association. Including the interaction term increased the pseudo-R^2 to .289, an increase of 2.1 percent. While the amount of explained variance did not increase substantially, inclusion of the interaction term significantly improved the fit of the model ($\Delta\chi^2[1,\ n=195]=5.74,\ p=.017$). The coefficient for this interaction was statistically significant, indicating that the effect of primary differential associations on minor IPV differed by mother-figure corporal punishment intensity. According to this interaction term, the odds of minor IPV for men who received more punishment during childhood from mother-figures increased substantially at higher levels of differential association with friends and other family members who engaged in and

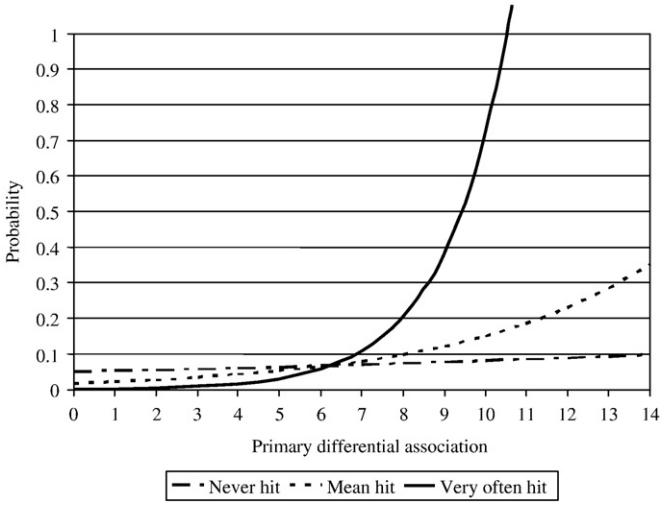

Fig. 1. Probability of minor intimate partner violence by primary differential association and mother-figure corporal punishment (minimum, mean, and maximum values). Note: The three lines reflect the minimum (centered = -0.906, comparable to uncentered = 0), mean (centered = 0.000, comparable to uncentered = 0.85), and maximum (centered = 2.286, comparable to uncentered = 3) values for mother-figure corporal punishment during childhood. The primary differential association frequency values used in calculating the above lines were the centered values. For ease of interpretation, the uncentered scores have been reported for labeling the x-axis. Values greater than 10 (uncentered) have a probability of greater than 1.0.

condoned IPV, compared to men who received little mother-figure corporal punishment.

To explore the differences between frequencies of mother-figure corporal punishment in greater detail, the coefficients from Model 3 of Table 1 were used to calculate the predicted probabilities of minor IPV by primary differential association for different mother-figure punishment levels.[6] Three levels of mother-figure punishment were examined: the minimum reported value (-0.906 [uncentered = 0, "never"]), the mean reported value (0.000 [uncentered = .85]), and the maximum reported value (2.286 [uncentered = 3, "very often"]). Fig. 1 indicates that the probability of engaging in minor IPV remained relatively low and flat when no corporal punishment from the mother-figure during childhood was reported, regardless of the frequency of differential associations with friends and family who engaged in IPV. The probability for minor IPV among men who reported average levels of mother-figure corporal punishment increased slightly when the frequency of primary differential associations observed engaging in IPV was high, but only approached a 35 percent chance of self-reported minor IPV. On the other hand, for men who reported high levels of mother-figure corporal punishment, the predicted probabilities for minor IPV increased substantially with more associations with friends and families who also engaged in IPV. Indeed, when one's mother-figure used corporal punishment "very often" during childhood and almost all of one's friends and other family members were observed by the respondent engaging in seven or more acts of intimate partner violence, the chance of the respondent also engaging in such behavior exceeded 90 percent.

Table 2 reports the logistic regression results for prevalence of severe violence. Model 1 in Table 2 shows the effects of the intergenerational transmission measures, controlling for race. The intergenerational transmission-only model accounted for 14.1 percent of the variance in severe IPV. For each one-unit increase in experiencing physical maltreatment, the odds of engaging in severe IPV increased 47 percent. These findings were consistent with prior tests of intergenerational transmission theory that suggested that past victimization led to future violence (Dutton & Hart, 1992; Hotaling & Sugarman, 1986). Interestingly, which parent administered corporal punishment and witnessing parent-on-parent violence were not significantly associated with adult severe IPV in adulthood. As was the case with minor IPV, race was significantly related to severe IPV. Controlling for family-of-origin violence, non-Whites were nearly three times as likely as Whites to report engaging in severe IPV.

Table 2
Logistic regression models of severe physical violence against an intimate partner on social learning and history of violence measures (n = 195).

	Model 1			Model 2		
	b	Se(b)	OR	b	se(b)	OR
Race (1 = non-White)	1.053*	.349	2.865	1.728*	.470	5.629
Corporal punishment						
Physical maltreatment	.385*	.104	1.470	.442*	.123	1.556
From mother-figure	-.338	.214	0.713	-.815*	.267	0.443
From father-figure	.213	.213	1.238	.437	.256	1.548
Witness parent abuse	-.026	.235	0.974	-.123	.279	0.885
Definitions						
Specific				-.051	.261	0.950
Neutralizing				.151	.142	1.162
Differential associations						
Others definitions				.105	.124	1.110
Primary frequency				.109	.085	1.115
Secondary frequency				.056	.098	1.058
Tertiary frequency				.188*	.059	1.207
Differential reinforcement						
Anticipated reactions				-.122	.185	0.885
Net outcome				-.252	.428	0.777
Non-interference				-.319*	.156	0.727
Rewards-to-costs				.217	.141	1.242
Imitation						
Primary imitation				-.369	.230	0.692
Secondary imitation				.925*	.384	2.521
Tertiary imitation				-.970*	.416	0.379
Intercept	-1.863*			-1.731		
-2 Log L (intercept)	249.17			227.18		
-2 Log L (model)	227.18			185.14		
Model χ^2/df	29.65/5*			71.69/18*		
Pseudo-R^2 (Cox and Snell)	.141			.308		

* $p<.05$.

Model 2 in Table 2 incorporated both intergenerational transmission and SLT measures in the model for severe partner violence, controlling for race. The combined model explained 30.8 percent of the variance, and was a significant improvement over the intergenerational transmission-only model with regard to fit ($\Delta\chi^2[13, n = 195] = 42.04$, $p<.001$). Unlike minor IPV, experiencing physical maltreatment remained significantly associated with severe IPV, despite the introduction of SLT measures. For each one-unit increase in physical maltreatment, the odds of severe violence increased 56 percent. Once SLT measures were introduced to the severe IPV model, corporal punishment from a mother-figure became significant. For each one-unit increase in corporal punishment by a mother-figure, the odds of severe IPV decreased 56 percent. These findings suggested that opposite-sex modeling may have inhibited adult IPV. In addition, race continued to have a significant, positive effect on severe IPV. When controlling for intergenerational transmission and social learning measures, non-Whites were over five times more likely to report engaging in severe IPV compared to Whites.

Model 2 in Table 2 indicated that four of the SLT measures had significant effects on the odds of severe IPV. Consistent with the tenets of social learning theory, tertiary (e.g., media) differential association and secondary (e.g., neighbors, co-workers, church members) imitation were significantly associated with an increase in the odds of engaging in severe IPV. For each one-unit increase in tertiary differential association and secondary imitation, the odds of severe violence increased 21 percent and 152 percent, respectively. Contrary to SLT, differential reinforcement with respect to a lack of interference in activities and tertiary imitation significantly decreased the odds of severe IPV. For each one-unit increase in non-interference, the odds of severe IPV decreased 27 percent. For each one-unit increase in tertiary imitation, the odds of severe IPV decreased 62 percent. Both intergenerational transmission theory and social learning theory appeared to be important, and independent, explanations of severe IPV.

Similar to minor IPV, whether the effects of SLT depend on childhood exposure to violence was tested. Again, to assist with the interpretation of interaction effects, as well as the preservation of power in the analyses, the examination of moderating effects focused on separate, centered interaction terms for the product of significant abuse measures and significant race and SLT measures. For severe IPV (Table 2, Model 2), this resulted in ten interaction models (physical maltreatment and mother-figure corporal punishment times race, tertiary frequency, non-interference, secondary imitation, and tertiary imitation). None of the ten interaction models were significant. (The models for nonsignificant interaction terms were excluded. Tables reporting the results for these models may be obtained from the corresponding author upon request.)

Discussion

It is well established that family-of-origin violence is positively associated with future partner violence. Traditionally, this relationship

has been examined from an intergenerational transmission theory perspective (Straus et al., 1980), which relies on a broad understanding of social learning during the early, formative years as a source of behavior modeling. Akers' social learning theory is a general theory of deviance that offers a more comprehensive explanation of the link between family-of-origin violence and partner violence. Indeed, "a question inherent in the social learning perspective is what type of aggressive model in the family of origin contributes to schemas in adulthood that aggression is an acceptable and effective behavior in intimate relationships" (Delsol & Margolin, 2004, p. 108). As such, SLT has recently been applied to the examination of acts such as domestic violence that "are typically committed in a dyad outside the presence of others or in a group context" (Sellers et al., 2003, p. 115). Furthermore, SLT offers an explanation for IPV that also includes peer and other non-familial influences on behavior. Arguably, the concepts of intergenerational transmission theory can be subsumed within a social learning theory framework (see Sellers et al., 2005), since they represent the earliest sources of primary associations, definitions, imitation, and reinforcement. As the learning mechanisms of life are conveyed to infants from birth, social learning is a natural extension of intergenerational transmission since socialization begins with a child's parents and care givers. Within this article, an attempt was made to expand the contemporary research on social learning and domestic violence and strengthen the generality of Akers' social learning theory by examining how social learning processes mediate and moderate the effects of childhood domestic violence experiences on adult intimate partner violence among a community-based sample of adult men.

Specifically, three hypotheses were proposed to explain the odds of committing minor (i.e., shaking, throwing/threatening to throw objects, and slapping) and severe (i.e., beating up, hitting, kicking, biting, and choking) intimate partner violence. First, it was hypothesized that a history of witnessing and experiencing domestic violence during childhood was associated with engaging in both minor and severe IPV. This first hypothesis received partial support, as experiencing physical maltreatment was associated with an increase in the odds of minor and severe IPV, while exposure to high levels of corporal punishment from a father-figure was associated with an increase in the odds of minor IPV. In contrast, the findings did not support other research that has found a more robust relationship between witnessing parental violence and IPV (Aldarondo & Sugarman, 1996; McNeal & Amato, 1998). The nonsignificant findings reported here may point to measurement issues, underreporting due to the sensitive nature of these traumatic events, and/or diluted effects due to the heterogeneity of the sample. Certainly, future research should extend this study to consider all forms of child maltreatment as well as alternative theoretical orientations (e.g., mental health, stress/strain).

The second hypothesis postulated that social learning theory mechanisms of IPV mediated the effects of physical maltreatment exposure. The effects of physical maltreatment on the odds of minor IPV were fully mediated by the introduction of SLT measures. The effects of physical maltreatment on severe IPV and father-figure corporal punishment on minor IPV were not mediated. In fact, the introduction of SLT measures revealed a suppression effect with regard to mother-figure corporal punishment, such that corporal punishment by a mother-figure had a significant but negative association with both minor and severe IPV. Hence, the second hypothesis received partial, though very limited, support, suggesting that intergenerational transmission and social learning theory provide two related but distinct mechanisms for interpersonal violence.

Overall, the present findings suggest that a combined model that incorporates social learning theory and intergenerational transmission theory provides a more comprehensive explanation of minor and severe partner violence prevalence among men in the present sample than either offer alone. Differential association from friends and other family members increased the likelihood of minor partner violence, and differential associations from media sources increased the odds of both minor and severe partner violence. Although these findings support one assertion of SLT, it is important to note that these proxy measures only captured part of the relationship between differential association and deviance and did not allow an examination of the specific influence of the frequency, duration, priority, and intensity of these associations. Men who anticipated positive reinforcement through the encouragement of friends and family were more likely to self-report minor partner violence. In addition, men who reported their behavior was influenced (i.e., imitation) by observing IPV among secondary others (e.g., neighbors, co-workers, church members) were more likely to report minor and severe IPV. These findings were consistent with the tenets of Akers' social learning theory.

Somewhat surprising, however, was a lack of significant findings linking primary imitation with acts of IPV. Since parents are the dominant source of behavioral learning, the decision to omit observed violence from the parents in order to avoid conceptual overlap with the intergenerational transmission indicators may have rendered the variable incapable of capturing the salience of primary imitation. This was a limitation of relying on cross-sectional data to examine closely-related constructs (i.e., one must be excluded to avoid collinearity issues). A longitudinal model would permit examination of the separate effects of intergenerational transmission and parental imitation over the life-course.

Contrary to social learning theory, men who reported that physical violence interfered (less non-interference) with their other daily activities were more likely to commit severe partner violence, and those who reported watching media that contained images of intimate violence were less likely to commit both minor and severe IPV. These results were counterintuitive to the assumptions of social learning and a substantial body of literature that suggested that perceived negative reinforcement deters behavior (B. F. Skinner, 1974) and media influences aggressive and violent behavior (for review see Anderson & Bushman, 2001). One possible, though somewhat controversial, explanation is that violent media may provide a cathartic release from aggression (Feshbach & Singer, 1971). By watching violence as a form of entertainment, these men may have vicariously expressed their negative affect, thereby initiating a pro-social coping mechanism to deal with their aggression. It may also be the case that this form of entertainment allowed for a symbolic release of violent tendencies via role playing, allowing an aggressive male to act out violence in lieu of directing it at an intimate partner.

Conversely, the present findings may speak to the degree to which respondents in the sample are likely to underestimate the effects of media on their own behavior. As noted earlier, men who reported observing higher amounts of media (tertiary frequency) containing intimate violence were more likely to assault their partners. In contrast, the measure of tertiary imitation relied on the respondent consciously acknowledging that external sources influenced his behavior. It may be that those individuals who were most likely to engage in partner violence were those individuals least likely to be cognitively aware of the violence which surrounded them in their daily lives. Unfortunately, the data did not permit further exploration into these counterintuitive results. Future studies should examine these issues further.

Finally, limited support was found for the third hypothesis that physical maltreatment moderated SLT mechanisms. For the most part, the effects of social learning measures on partner violence were not dependent upon intergenerational transmission measures. The effects of mother-figure corporal punishment, however, moderated the relationship between differential associations with friends and family members who engaged in intimate violence and minor IPV. The probability of minor IPV increased markedly among men who reported a history of high amounts of mother-figure corporal

punishment and associations with primary others who engaged in high amounts of IPV. This finding was quite noteworthy given the fact that mother-figure corporal punishment, in general, reduced the odds of minor IPV among the men in this study. More specifically, the results suggest the combination of a mother-figure who is a harsh disciplinarian with frequent associations with domestically abusive friends and family can have serious consequences for adult intimate relations.

Conversely, this interaction effect suggested that having a mother who never utilized corporal punishment decreased the likelihood of adult minor IPV, regardless of the nature and frequency of primary associations. In general, experiencing corporal punishment from a mother-figure was associated with lower risk for engaging in both minor and severe interpersonal violence, while corporal punishment from a father-figure was associated with increased risk for minor interpersonal violence. These results were consistent with past research which suggested that the negative effects of corporal punishment on children could be moderated by the emotional context within which it occurs (McCloyd & Smith, 2002).

Similar to the findings of Corvo (2006), who tested a model of intergenerational transmission of violence integrated with attachment theory rather than social learning, the findings suggest the integrated measures (i.e., SLT) serve best as mediators versus moderators. Thus, intergenerational transmission remains a valid theory but does a poor job of explaining IPV standing alone. As such, this theory appears to be enhanced by the inclusion of SLT concepts. The present article offers an important first step and contributes to the IPV and theoretical literature; however, future research should further pursue inquiries into other appropriate theoretical integrations that will strengthen the validity of intergenerational transmission theory.

This work also highlights striking racial differences in risk for minor and severe IPV despite considering a number of theoretically important childhood experiences and learning mechanisms. Race differences were magnified when controlling for childhood physical maltreatment and learning mechanisms. It is likely that the present analyses were not able to fully account for differences in the unique experiences of racial minorities and Whites. Racial and ethnic minorities are disproportionately refereed into the criminal justice system for domestic abuse (Aldarondo & Mederos, 2002), a situation that may only be exacerbated by racial and ethnic disparities in poverty and ecological context. Massey and Denton (1989) noted consistent levels of racial residential segregation since the 1960s, which serves to concentrate and exacerbate the impact of poverty and socioeconomic disparity among racial and ethnic minorities. Consideration of contextual factors has proved fruitful in reducing race differences in rates of IPV; however, the intersection of race and poverty may not be replicable for Whites even among the lowest end of the socioeconomic spectrum (Benson et al., 2004). In particular, future research should consider the role of race and ethnicity, socioeconomic status, and community differences in understanding interpersonal violence.

The first notable limitation of this work was the reliance upon cross-sectional data. Although this study found several significant effects for intergenerational transmission and social learning variables on intimate partner violence, the "causal" nature of these relationships is uncertain. Further, numerous researchers have critiqued the methodological considerations of using retrospective, cross-sectional data versus prospective, longitudinal data (Fergusson, Horwood, & Woodward, 2000). Clearly, retrospective types of clinical studies dominate much of the family violence literature due to their convenience, affordability, and less restrictive adult human subjects criteria. Yet such results may be difficult to generalize, encourage social desirability responses, and/or have reporting biases caused by memory lapses, repressed memories, changing interpretations of events over time, and denials due to social stigma associated with various forms of abuse (Widom & Shepard, 1996). Although longitudinal research is certainly not without its methodological challenges (see e.g., Moffitt, Caspi, Rutter, & Silva, 2001), future research should replicate this work using longitudinal data.

Secondly, the study was limited by the sample. All subjects were active participants in a state-mandated domestic violence program. Despite this fact, there was heterogeneity within these "batterer" groups, with some participants attending classes due to a court order related to anger management or to build positive parenting skills (see Dixon & Browne, 2003). Identifying differences among batterers and their behaviors may highlight distinct pathways for the development of interpersonal violence, mechanisms for the maintenance of violent behavior, and risk for repeated violence between different types of batterers. Moreover, the sample was small, thereby restricting the complexity and statistical power of the analyses. Small sample sizes may prevent the generalizability of findings to the population and lead to problems detecting significant differences in effect sizes, thus increasing Type II errors. Consequently, the analyses were limited to examining only one demographic control measure. Furthermore, this study was confined to batterers participating within one geographic region. Future research should replicate this research in other geographic areas and consider including batterers opting out of intervention programs or treatment.

Regarding family-of-origin experiences of violence, the measures of childhood physical maltreatment and witnessing inter-parental violence were relatively crude and narrow in scope. Recent IPV research has provided preliminary support that other forms of coexisting child maltreatment, specifically neglect, physical, and psychological abuse, were significant predictors of physical spouse abuse when controlling for learning and physical abuse in childhood (Bevan & Higgins, 2002). Thus, future studies may wish to include multiple measures of these forms of child maltreatment to offer a more complex model, which may provide a more complete picture of how multiple types of abuse commingle and contribute to IPV (Delsol & Margolin, 2004).

There are several relevant implications of this work. First, the fact that early childhood physical maltreatment remained significant even when including other theoretical measures highlights the salience of parenting in the development of adult relationships. That is, physical maltreatment experienced during childhood may lead some individuals to establish physical and abusive intimate relationships. Furthermore, the parent-child relationship appears to greatly influence other relationships established throughout the life-course, including primary associations. Early intervention holds great promise in affecting change in families by helping parents to become better role models for functional intimate relationships. Overall, these results imply that early relationships between children and their parents set a foundation of "normative" and acceptable behaviors that may lead some individuals to seek out relationships with other persons or forms of media that endorse a lifestyle of dysfunction similar to their family-of-origin.

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Appendix A. Correlations among independent variables

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1	Specific	–																	
2	Neutralizing	.35*	–																
3	Others definitions	.28*	.27*	–															
4	Primary frequency	.13	.19*	.24*	–														
5	Secondary frequency	.13	.13	.18*	.57*	–													
6	Tertiary frequency	-.02	.07	.16*	.42*	.32*	–												
7	Anticipated reactions	.05	.36*	.13	.09	.04	-.02	–											
8	Net outcome	.24*	.24*	.21*	.12	.05	.05	.17*	–										
9	Non-interference	.08	-.15*	-.02	-.01	-.04	-.09	-.06	.02	–									
10	Rewards-to-costs	.24*	.33*	.25*	.06	.04	-.08	.35*	.38*	-.02	–								
11	Primary imitation	.13	.10	.10	.47*	.29*	.12	.03	-.04	-.06	-.09	–							
12	Secondary imitation	-.01	.03	-.02	.21*	.52*	.08	-.03	.02	.03	.01	.36*	–						
13	Tertiary imitation	-.04	.04	-.05	.15*	.11	.21*	-.10	.04	-.07	.00	.22*	.27*	–					
14	Physical maltreatment	.02	.09	.07	.32*	.10	.10	-.05	.07	-.11	.06	.25*	.18*	.09	–				
15	Punishment by mom	.08	.20*	.08	.23*	.14*	.05	.08	.11	.04	.13	.20*	.19*	.03	.40*	–			
16	Punishment by dad	.04	.11	.03	.16*	.03	.04	.05	-.04	-.03	.03	.21*	-.01	-.03	.38*	.47*	–		
17	Parental abuse	.08	.08	-.08	.17*	.04	-.05	.11	.02	-.17*	.15*	.20*	-.03	-.02	.28*	.26*	.32*	–	
18	Race	.13	.08	.05	.14	.16*	-.14*	.15*	.14*	-.10	.14*	.16*	-.03	.03	.02	.20*	-.01	.25*	–

* $p<.05$.

Notes

1. Domestic violence is a broad concept that has been defined in a variety of ways. In general, the term refers to a pattern of aggressive, possibly violent, behavior employed by one person in an intimate relationship to maintain dominance or control over their intimate partner. Thus, the terms domestic violence and intimate partner violence are used interchangeably within the present article.

2. Additional regression analyses were performed to examine treatment effects, measured as a dichotomous indicator (1 = treatment, 0 = orientation), on domestic violence prevalence. In all models, the treatment indicator was nonsignificant. Moreover, controlling for treatment resulted in no substantive changes in the models. Copies of these analyses are available from the corresponding author upon request.

3. The correlations between a measure of primary differential association including parent violence and the four abuse measures were modest (range from $r=.176$ to $r=.374$). Supplemental analyses were performed including the frequency of parent violence observed in the primary frequency index, with similar results. In addition, analyses excluding both the frequency of parent violence and other family violence from the primary frequency index were conducted, with similar results.

4. There were moderately strong correlations between primary and secondary frequency of differential association ($r=.57$), secondary frequency of differential association and secondary imitation ($r=.52$), primary frequency and primary imitation ($r=.47$), and corporal punishment from mother and corporal punishment from father ($r=.47$). Conceptually, these strong correlations make sense given the theoretical assertions; hence, they were retained in the models. VIF scores were estimated using ordinary least squares regression analyses replicating the equations presented for the violence logistic regression models, with scores greater than 4 considered indicative of multicollinearity problems. The highest observed VIF scores were for the frequency of primary others differential association measure (2.80 and 2.90 for the minor IPV combined and interaction models, respectively; 2.80 for the severe IPV combined model).

5. Outliers were examined in several ways including using the standardized residual scores. Cases with residual scores greater than ± 2.9 standard deviations were considered outliers for these data. The models were also estimated including outlier cases, with few substantive differences.

6. In calculating the predicted probabilities, all other explanatory variables were set at zero.

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